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Google Sites como estrategia didáctica en el aprendizaje del movimiento rectilíneo variado

Google Sites as a teaching strategy in learning varied rectilinear movement

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Palabras claves:
Google Sites, Estrategia didáctica, Aprendizaje, Movimiento rectilíneo variado, Blended learning.

Resumen

Introducción: el estudio se enfoca en el uso de Google Sites como una estrategia didáctica, innovadora para mejorar el aprendizaje del Movimiento Rectilíneo Uniformemente Variado MRUV, en estudiantes de primero de bachillerato de la unidad educativa Liceo Naval Quito, durante el segundo trimestre del período académico 2023 – 2024. **Objetivos:** diseñar un sitio web mediante Google Sites para mejorar el aprendizaje del MRUV en los estudiantes. Implementar la estrategia didáctica *B-learning*, utilizando Google Sites y el apoyo del simulador digital PhET como herramienta tecnológica de innovación y evaluar su efectividad en la mejora del rendimiento académico. **Metodología:** el enfoque metodológico utilizado fue el "Blended learning" o aprendizaje combinado. Esta estrategia pedagógica integra la instrucción presencial con actividades y recursos digitales, con el fin de aprovechar los beneficios de ambos entornos de aprendizaje. Para esto se aplicó el método descriptivo e inferencial donde se recolectaron datos mediante un test cuantitativo realizado en Google Sites. Se utilizó el software estadístico SPSS (Statistical Package for the Social Sciences), y se realizó pruebas de diferencias de medias y normalidad para determinar si existe variación significativa entre los resultados del pre-test y post-test, así como la aceptación de la hipótesis planteada. **Resultados: Descriptivos:** la aplicación del pre test de física realizado a los cuarenta estudiantes fueron de 6,02 / 10 y luego de emplear la estrategia didáctica Google Sites, los resultados Post test, fueron de 7,68 / 10 que indica un resultado positivo de la estrategia didáctica implementada. **Inferencial:** con la aplicación del software estadístico SPSS a los valores pre test y post test recopilados, se realizó el test de normalidad dando resultado la prueba no paramétrica de Wilcoxon, estableciéndose la aceptación de la hipótesis planteada. **Conclusiones:** La implementación de Google Sites como estrategia didáctica es eficaz para mejorar la comprensión y el rendimiento de los estudiantes de primero de bachillerato en la Unidad Educativa Liceo Naval Quito. **Área de estudio general:** Educación. **Área de estudio específica:** Física y Matemática. **Tipo de estudio:** original.

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Keywords:
Google Sites, Teaching strategy, Learning, varied rectilinear movement, Simulator, blended learning.

Abstract

Introduction: This study focuses on the use of Google Sites as an innovative didactic strategy to improve the learning of the Uniformly Varied Rectilinear Movement MRUV, in first year high school students of the Liceo Naval Quito educational unit, during the second quarter of the academic period 2023 – 2024. Objectives: design a website using Google Sites to improve students' learning of the MRUV. Implement the B-learning didactic strategy, using Google Sites and the support of the PhET digital simulator as a technological innovation tool and evaluate its effectiveness in improving academic performance. Methodology: the methodological approach used was "Blended learning". This pedagogical strategy integrates in-person instruction with digital activities and resources, to take advantage of the benefits of both learning environments. For this, the descriptive and inferential method was applied where data was collected through a quantitative test conducted on Google Sites. The statistical software SPSS (Statistical Package for the Social Sciences) was used and tests of differences in means, and normality were conducted to determine if there is significant variation between the results of the Pre-test and Post-test, as well as the acceptance of the proposed hypothesis. Results: descriptive: the application of the physics pre test conducted on the forty students was 6.02 / 10 and after using the Google Sites teaching strategy, the post test results were 7.68 / 10, which indicates a positive result. of the teaching strategy implemented. Inferential: with the application of the SPSS statistical software to the collected Pre-test and Post-test values, the normality test was performed, resulting in the non-parametric Wilcoxon test, establishing acceptance of the proposed hypothesis. Conclusions: the implementation of Google Sites as a teaching strategy is effective in improving the understanding and performance of first year Baccalaureate students at the Liceo Naval Quito Educational Unit. General area of study: Education. Specific area of study: Physics and Mathematics. Type of study: original.

Introduction

The Ecuadorian educational system after the pandemic (COVID 19) went through a very significant digital gap, as students and teachers found it necessary to use digital tools and platforms to continue in-person and virtual classes. During this time, it was evident that children and adolescents were more familiar with technology, even considering them as digital natives, compared to their respective teachers.

The advancement of technology in education at all levels has transformed the way educators approach the teaching-learning process (Vargas-Murillo, 2020). That is, the increasing availability of digital tools has provided opportunities to improve the quality and effectiveness of education. On the other hand, students have revealed to a greater or lesser degree the academic difficulty with one of the subjects that are present in almost every curricular structure, such as physics.

In this context, this research focuses on one of these technological tools, Google Sites, and its potential as an innovative teaching strategy since it allows managing and designing teaching and learning techniques virtually (Hoyos & Márquez, 2020). In this way, it is intended to improve the understanding of Uniformly Varied Rectilinear Movement (MRUV), in first-year students of Unified General Baccalaureate (1BGU) at the Educational Unit (UE) Liceo Naval Quito.

Ultimately, this research aims to demonstrate how implementing Google Sites as a teaching strategy can not only address the challenges inherent to teaching MRUV, but also increase motivation, student engagement, and the quality of education at UE Liceo Naval Quito. In an increasingly digital and technology-focused world, this initiative has the potential to prepare students for a successful academic and professional future.

The Quito Naval High School, located in the city of Quito, province of Pichincha, offers quality education for students with a naval vocation and maritime awareness, belonging to the Ecuadorian Navy. In addition to its educational offer in the coastal and mountain cycles, it provides services for both primary and secondary school in both regimes, with computer laboratories equipped with state-of-the-art computers and internet access, intended for practices related to computer systems.

The implementation of Google Sites as a teaching strategy for learning MRUV in 1BGU students of the Quito Naval High School is justified by the need to address the low academic performance in physics during the 2023-2024 period. This platform offers an interactive and accessible digital environment, allowing students to access multimedia content, perform online exercises, collaborate with their peers and receive immediate feedback, which encourages more dynamic and effective learning, contributing to improving understanding and academic performance in the subject.

Dávila-Rojas & Gutiérrez-Pantoja (2019) point out that Google Sites is a useful tool in teaching as it allows students to design an interactive class. In this way, a teaching strategy is established by the teacher who will teach the physics subject by creating personalized websites that incorporate dynamic graphics, visual examples and practical exercises, allowing high school students to visualize and experience physical principles in a much more effective way than in a traditional approach.

The problem regarding the learning of first-year high school students regarding the subject of physics, as established by Elizondo (2013), lies fundamentally in the understanding of the concepts involved in the subject, as well as its relationship with another subject such as mathematics (pp. 70-77). The subject of physics, in particular, requires a solid understanding of mathematical concepts to apply principles and formulas in problem solving. Some of the specific problems that students might face include:

a. **Abstraction of physical concepts:** Lyceum students often struggle to visualize abstract concepts in physics, such as force, velocity, acceleration, and how these relate to the real world.
b. **Difficulties with associated mathematics:** Using complex mathematical equations and formulas can be challenging if students do not have a strong mathematical foundation. This can hinder the solving of Physics problems that involve complex numerical calculations.
c. **Connection between theory and practice:** Students may find it difficult to connect abstract Physics theory with practical, real-world applications, which can hinder their understanding of the subject in general. It is for this reason that a digital tool such as Google Sites has been implemented so that the student can interact through all the benefits offered by this structured platform and among them the use of a well-known physics simulator such as *PhET (Physics Education Technology)*.

The purpose of this research is to analyze the academic performance of first-year high school students in the subject of physics, specifically at the Liceo Naval Quito Educational Unit, during the 2023-2024 school year.

The general objective of this research is to design a website using the Google Sites platform, in order to improve the learning of Uniformly Varied Rectilinear Movement (MRUV), in the first year high school students of the Liceo Naval Quito Educational Unit.

The specific objectives of the research focus on identifying the characteristics and functionalities of Google Sites for its educational application, designing a tool in Google Sites integrated with the PhET simulator to facilitate the understanding of MRUV, implementing a B-learning didactic strategy using Google Sites as a technological tool to

improve MRUV learning in 1BGU students of the Quito Naval High School, and evaluating the effectiveness of this strategy in improving students' academic performance.

Theoretical Framework

Digital resource

The use of content and materials in digital format has become more relevant today in the fields of education, work and leisure. This is because digital resources offer some advantages such as greater accessibility to information, media portability, interactivity with other users and possibilities of continuous content updating.

According to Gazzola & Otero (2023), it primarily and generally establishes as a resource those materials such as blackboards, calculators, computers and secondarily as books and school texts. However, a digital resource is more complete since it relates support, meaning and projection to the work carried out by the teacher.

RED Digital Educational Resource

Digital educational resources encompass a wide range of tools and content in electronic format for teaching and learning between teachers and students, including digital books and manuals, multimedia presentations, interactive simulations, virtual learning environments, collaboration tools and information databases. These resources allow educational processes to be enriched and made more flexible, promoting interactivity, personalization and collaborative learning. From multimedia content to productivity applications, these digital resources have become essential to innovate and modernize the educational experience in the digital age.

In this way, Vega et al. (2021) establish that RED refers to all digital material such as videos, images, audios with the purpose of improving the learning process.

B-learning

Before the implementation of technological tools, the traditional educational system was based on a face-to-face teaching model made up of a teacher and his students in a classroom with the only available materials being a marker and a blackboard. With technological advancement,have developedsome teaching models in order to facilitate learning, one of them is B-learning.

According to Parra-Vallejo (2022), the B-learning teaching model combines two important phases: the traditional face-to-face stage and a virtual stage that arises from technological advancement. This modality seeks to strengthen the process of training students in the use of new technologies for teaching. Learning skills related to ICT

(Information and Communication Technologies) go beyond technical mastery, involving cognitive abilities and a functional management of technological resources.

Learning

Tapia (2022) argues that cognitive learning is related to the channeling of information in the person with specific functions related to reasoning, its respective processing and immediate generation of response; that is, it provides an understanding of how human beings learn and think.

Constructivism suggests that students are not passive recipients of knowledge, but rather actively participate in the construction of their own understandings (Vizcaíno et al., 2023). This process is based on the idea that students construct and structure new knowledge based on their previous experiences and the interactions they have with their teachers and the environment in general (Vera et al., 2020).

Terol (2021) establishes that learning theories are conceptual frameworks designed to explore and explain the knowledge acquisition processes of human beings that have evolved from contributions from various fields such as philosophy, psychology, sociology, pedagogy and didactics.

Gargicevich (2020) points to connectivism "as a new learning theory in the digital age" (p. 7), since this theory was developed as a result of the pandemic caused by COVID 19 worldwide, causing us as human beings to reorganize ourselves according to the three fundamental aspects of our society such as the way we live, the way we communicate with each other and the way we learn, resulting in a new vision of learning using ICT (Leyton, 2018). Therefore, it is essential for the teacher to develop the teaching and learning process in students using technological environments. Connectivism and constructivism, although they have their differences, share some common principles related to the learning process.

Teaching strategy

Nowadays, the development of technology in many educational institutions presents the challenge of using digital resources within the classrooms to improve the teaching-learning process of students. But thisentailsthe commitment of teachers and students to adapt to today's technological world (Dávila-Rojas & Gutiérrez-Pantoja, 2019).

According to Rodríguez et al. (2024), in an article published in the ULEAM Bahía Magazine entitled: “Implementation of Google Sites for the teaching-learning of chemical solutions”, a study is presented on the incorporation of Google Sites as a digital tool for the teaching and learning of chemical solutions. The research examines how this platform

can facilitate the understanding of the theoretical foundations and the development of practical skills related to the preparation and calculations of solutions.

The methodology combines the collection of quantitative and qualitative data through an instructional design that integrates theoretical content, practical exercises and assessments. The study was conducted with a sample of 223 students and 3 teachers from the natural sciences area of an educational institution.

The results reveal that the implementation of Google Sites to support face-to-face classes has significantly improved student learning. Increased interest and motivation were observed, as well as favorable performance in interactivity and assessments. This study highlights the potential of technological tools to enrich the teaching-learning process in the field of chemical sciences.

Physics

According to Tipler & Mosca (2021) they express: "the word physics comes from Greek and means knowledge of the natural world" (p. 32), therefore physics is responsible for studying all the phenomena that occur in nature, especially the movement of bodies that are observed around us. The important physical parameters that intervene in a movement are the speed, acceleration and distance traveled as time passes, each accompanied by its respective unit of measurement in the so-called SI (International System of Measurements), in this way, certain physical magnitudes will be used: the speed whose unit of measurement is the meter / second (m / s), the acceleration whose unit of measurement is the meter / second squared (m / s2), the length or distance traveled whose unit of measurement is the meter (m) and the time with its representative unit which is the second (s).

Therefore, physics will focus on the study of a special type of movement such as Uniformly Varied Rectilinear Motion (MRUV), thus involving kinematics as a part of this subject, which is responsible for studying the movement of a body without taking into account the causes that produce it.

Kinematics

According to Coluccio (2021), kinematics is a field of physics that deals with analyzing the displacement and trajectory of solid objects over time, without taking into account the forces that drive them. To carry out this analysis, aspects such as the velocity (change in position per unit of time) and acceleration (change in speed) of moving objects are considered. Mastery of this prior knowledge provides a solid foundation for understanding MRUV, its characteristics, applications, and solving related problems.

Uniformly Varied Rectilinear Motion MRUV

Pérez (2015) establishes that the MRUV: "is that movement in which a mobile moves on a straight path being subjected to a constant acceleration" (p.14), which means that it is a type of action when a mobile describes a straight path or trajectory with constant or uniform acceleration resulting from a change in speed over time.

Mero-Ponce (2021) states:"lThe web allows us to consider the possibility of a complete and necessary restructuring of the educational institution to adapt it to current times"(p. 716),Therefore, developing learning in students has always been the challenge of every teacher throughout many years in any part of the world. In all educational institutions, all teachers have sought and continue to seek a way to reach the student by awakening interest and motivation to learn in a certain subject. It is for this reason that a digital tool such as Google Sites is intended to be used to incorporate a topic from a physics class, which together with all the benefits offered by the digital tool can establish an academic structure to teach the MRUV subject.

The integration of Google Sites as a digital tool to address the topic of MRUV in a Physics class offers multiple benefits when combined with gamification elements and the use of virtual simulators. Google Sites allows the creation of an organized and visually attractive academic structure, where students can reinforce the previous concepts of MRUV.

PhET Simulator

The interactive simulator used within Google Sites to improve the teaching-learning process in students is PhET (Physics Education Technology) developed at the University of Colorado (Lino-Calle et al. 2023). Therefore, PhET will be used as a free digital resource that will simulate the MRUV since it is structured by commands that will control kinematic parameters such as distance, speed, acceleration and time.

Methodology

The main hypothesis is that the use of the Google Sites technological tool, implemented under the B-learning methodology, significantly improves the learning of Uniformly Varied Rectilinear Movement (MRUV) in the first year high school students of the Quito Naval High School. Additionally, the secondary hypothesis is that the implementation of additional strategies, such as gamification, real-life problem solving and collaborative work, can complement the Google Sites strategy and further enhance the understanding of MRUV concepts in the Educational Unit.

The independent variable of the research is the teaching strategy with Google Sites, which represents the implementation of this tool. This variable is considered binary (0 = not implemented, 1 = implemented) and will be applied to the two parallel courses of the first

year of high school (Parallel A = 1, Parallel B = 1). The dependent variable is learning, which will be assessed through grades or scores in specific tests related to the MRUV, both before and after the implementation of the strategy.

The study population is composed of all first-year high school students at the Quito Naval High School in the 2023-2024 school year. The sample will be composed of all first-year high school students, both in parallel A and parallel B, to ensure complete and reliable representation of the data.

The research is characterized by combining different types of research. Experimental research will be used to evaluate the direct impact of the implementation of Google Sites as a teaching strategy in MRUV learning, applying a pre-test at the beginning of the second term and a post-test at the end of the technological innovation, to then compare and analyze both results. Descriptive research will be used to provide a detailed overview of the current situation regarding the teaching of MRUV and the technology available at the Quito Naval High School. This research will help collect data on the current state of teaching and the use of technology in the classroom. Evaluation research will be used to measure the effectiveness of Google Sites as a teaching strategy in terms of improvements in student learning, participation, motivation, and other indicators. Finally, exploratory research will be used to investigate new or understudied aspects of the implementation of Google Sites in the teaching of MRUV. This research will help identify emerging patterns, challenges, and opportunities. The combination of these types of research will allow for a complete and in-depth analysis of the implementation of Google Sites as a technological tool for teaching MRUV at the Quito Naval High School.

The present study was carried out using the quantitative approach, which involves the collection and analysis of numerical data in order to validate the hypothesis. The scope of the work is established as descriptive and inferential, since it involves the exploration of the research problem, the analysis of emerging phenomena and the identification of concepts or variables that could be the subject of study in the future. The research design adopts a quasi-experimental structure because partial control of the variables involved is established..

Results

The work was carried out at the Quito Naval High School, coastal cycle, a fiscal-missionary entity located in the city of Quito, Conocoto parish. The work was developed in the Physics subject during the second quarter of the 2023-2024 school year. The sample consists of the application of a pre-test and post-test aimed at a total of 40 first-year high school students in two parallels A and B, with a balanced distribution between men and women, ranging in age from 14 to 16 and enrolled in 1BGU.

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Data was collected during the second quarter through an initial assessment (pre-test) using the traditional method and another at the end (post-test), which is applied to students after the implementation of the pedagogical strategy such as B-learning and the Google Sites digital tool. The evaluation instruments implemented for students are designed based on the regulations to achieve the competencies established within the national curriculum required by the Ministry of Education of Ecuador Mineduc.

When faced with assessments that cover these competencies, the student is faced with the resolution of a problem that leads him to consider how to act and how to do it. In this way, the competencies that the student must develop are indicated:

a) The ability to explain natural phenomena, which implies the capacity to develop interpretations and understand arguments and models that justify a phenomenon, as well as evaluate the validity or coherence of a statement or argument related to a scientific problem or phenomenon.

b) Inquiry involves the ability to recognize that through research, interpretations are formulated about the natural environment, and encompasses the methods or approaches used to generate new questions or attempt to answer them.

c) The ability to use scientific knowledge in a comprehensive manner consists of understanding and applying concepts, theories and notions of natural sciences to solve application exercises, as well ashow to set upconnections between acquired concepts and knowledge, and commonly observed phenomena.

The digital tool incorporated Google Sites as shown in figure 1, provides ainterfacedidactic and personalized displaying the following content: Presentation and welcome, definitions, equations, PhET simulator, application exercises, questionnaire and thanks.Access link to Google Siteshttps://sites.google.com/view/simulatorphetfisica1bgu/p%C3%A1gina-principal

Figure 1

Presentation of the digital tool: Google Sites

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One of the innovative features of the Google Sites tool is the implementation of the PhET simulator as shown in Figure 2, allowing students to interact during virtual sessions or as autonomous learning activities exploring concepts and phenomena in an interactive and visual way improving their understanding.

Figure 2

Introducing the PhET Simulator

The evaluation consists of 10 multiple choice items with a total of 4 possible answers, of which 3 questions are related to the explanation of natural phenomena, 4 inquiry questions and 2 related to the use of scientific knowledge that has to do with the resolution of exercises related to the MRUV.

The average score obtained is 6.02/10. The independent variable is the teaching strategy using Google Sites, while the dependent variable is the academic learning reflected by the students in the MRUV subject.

The final test after implementing the Google toolSites is presented in figure 2, it consists of 10 multiple choice physics items, applied to the same forty first year high school students inheIt can be observed that the results obtained are very favorable compared to the evaluation carried out at the beginning of the teaching process, obtaining a general average of 7.68 / 10.

*Results obtained before using the teaching strategy:*the physics pre-test applied to the forty first-year high school students during the second quarter of the 2023-2024 school year is 6.02 / 10.

*Results after using the teaching strategy:*the physics post test using the Google teaching strategySites and applied to the same forty first-year high school students during the second quarter of the 2023-2024 school year is 7.68/10.

Comparing both quantitative results through the academic average,HEYou can see that there is an improvement in the academic performance of students regarding the MRUV topic, where the pre-test and post-test results are reflected.

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Inferential scope: To verify the research hypothesis, it will be analyzed whether the distribution of the data complies with the assumption of normality. In this case, it will be analyzed if the p value of normality is > 0.05, then it will be concluded that the data comply with the normal distribution; therefore, a parametric test will be applied. Otherwise, a non-parametric test will be applied.

Research design: The design of the research work is carried out using the pre-test and post-test application technique applied to a single group of students with the following scheme:

G: T1 H T2 (1)

Where:

G:Group of 40 students; T1: Pre-test (physics performance test before technological innovation); H: Google Sites tool (technological innovation process); T2: Post-test (physics performance test after technological innovation)

To carry out the descriptive data and the normality test, the SPSS (Statistical Package for Social Sciences) computer package is used, which provides statistical analysis with learning algorithms.

The descriptive results obtained from the pre-test are presented where the mean is set at 6.02 as shown in Table 1.

Table 1

Descriptive results Pre test and Post test

Descriptives				
			Statistical	Standard error
Pre Test	Average		6,0175	,41025
	95% confidence interval for the mean	Lower limit	5,1877	
		Upper limit	6,8473	
	Medianto		6,5500	
	Variance		6,732	
	Standard deviation		2,59466	

Table 2 shows that the post-test is set at a value of 7.68.

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Table 2

Descriptive results Pre test and Post test

			Statistical	Standard error
Post Test	Average		7,6750	,37619
	95% confidence interval for the mean	Lower limit	6,9141	
		Upper limit	8,4359	
Post Test	Median		8,5000	
	Variance		5,661	
	Standard deviation		2,37926	

The normality test is presented below, using the Kolmogorov-Smirnov criterion for a sample N=40 considering both the pre-test and the post-test as shown in Table 3.

Table 3

Kolmogorov-Smirnov test

		PreTest	Post Test
N		40	40
Normal parametersa,b	Average	6,0175	7,6750
	Standard deviation	2,59466	2,37926
Maximum extreme differences	Absolute	,148	,211
	Positive	,089	,164
	Negative	-,148	-,211
Test statistic		,148	,211
Asymptotic Sig. (bilateral)		,028c	,000c

a. The test distribution is normal.
b. It is calculated from data.
c. Lilliefors significance correction.

It can be observed that the p value of normality for the pre-test is 0.028 and for the post-test it is 0.000, being in both cases a value < 0.05; therefore, it is concluded that the data do not follow a normal distribution, in this sense a non-parametric test should be used, such as the Wilcoxon Rank test, obtaining the results as shown in Table 4.

Table 4

Wilcoxon rank test

		N	Average range	Sum of ranks
Post Test - Pre Test	Negative ranges	9a	16.56	149,00
	Positive ranges	28b	19.79	554.00
	Ties	3c		
	Total	40		

a. PostTest < PreTest
b. PostTest > PreTest

c. PosTest = PreTest

Therefore, the significance value obtained from the Wilcoxon test performed is shown in Table 5.

Table 5

Wilcoxon rank test

	Post Test - Pre Test
Z	-3,058b
Asymptotic Sig. (bilateral)	,002

a. Wilcoxon signed rank test
b. It is based on negative ranges.

In this way, the significance obtained is 0.002 < 0.05, concluding that the hypothesis raised is accepted.

Hypothesis:The use of the Google Sites technological tool improves students' academic learning based on the B-learning methodology.

What additional strategies can be used in the Educational Unit to improve the understanding of the concepts involved in the subject?

Conclusions

Taking into account the reference study of the ULEAM Bahía Magazine, the conclusions of this work can be expanded as follows:

- The main objective of this study, as well as that of the previous research, was to design a website using the Google Sites tool to improve the learning of Uniformly Varied Rectilinear Motion (MRUV) in first-year high school students. Both studies agree on the effectiveness of this teaching strategy.
- The hypothesis, supported by the findings of the ULEAM Bahía Magazine, maintains that the use of the technological tool Google Sites, within a B-learning methodology, significantly improves the academic performance of students. This is because the implementation of Google Sites generates greater interest and motivation in students, which translates into greater interactivity and better performance in assessments.
- The results obtained in this research confirm the trend observed in the reference publication. The improvement in the average grades, from 6.02/10 in the pre-test to 7.68/10 in the post-test, demonstrates the positive impact of the teaching strategy implemented. This is in line with the findings of the journal, which also reported a favorable performance of students when using Google Sites.

- In conclusion, this study, supported by evidence from previous research, concludes that the use of Google Sites as a support for face-to-face classes has great potential to enrich the teaching-learning process in the field of science, in this case specifically in the subject of Uniformly Varied Rectilinear Motion. This is because the technological tool promotes motivation, interactivity and, ultimately, better academic performance of students.

Conflict of interest

The authors declare that there is no conflict of interest in relation to the submitted article.

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